CLAIMS

What is claimed is:

1. A photoresist comprising:

   a cycloolefin functionalized with a di-ol.

2. The photoresist of claim 1, further comprising:

   an aromatic structure copolymerized with the cycloolefin.

3. The photoresist of claim 2, further comprising a molecule bonded to the aromatic structure, wherein the molecule is selected from a group consisting of a hydrogen atom, an alkyl group, or a hydroxyl group.

4. The photoresist of claim 1, wherein the di-ol comprises an alkyl functionalized by two hydroxyl groups.

5. The photoresist of claim 1, wherein the di-ol further comprises additional functional groups, each functional group being selected from a group consisting of a hydrogen atom, an alkyl group, an aromatic structure, or a cage.

6. The photoresist of claim 1, wherein the cycloolefin is an aromatic structure.

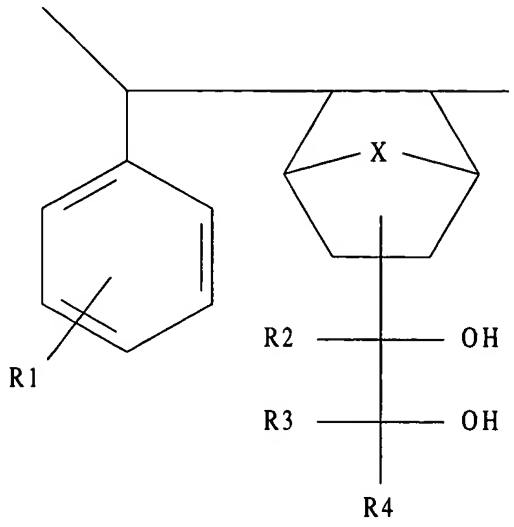
7. The photoresist of claim 1, wherein the cycloolefin is a norbornene structure.

8. The photoresist of claim 7, wherein the norbornene structure comprises a side-group, wherein the side-group is selected from a group consisting of a carbon atom, and alkyl group, an oxygen atom, or a sulfur atom.

9. The photoresist of claim 2, further comprising a photo acid generator (PAG).

10. A photoresist comprising:

a copolymerized structure represented by the following molecule



(1)

where R1 is a hydrogen atom, an alkyl, or a hydroxyl, where each of R2, R3 and R4 is a hydrogen atom, alkyl, aromatic, and/or cage, and where X is no atom, a carbon atom, an alkyl, an oxygen atom, or a sulfur atom.

11. A method comprising:

depositing a photoresist comprising a cycloolefin functionalized with a di-ol on an underlying layer; and

exposing at least a portion of the photoresist to radiation to form at least a carbonate containing material.

12. The method of claim 11, wherein the carbonate containing material is a ketone.

13. The method of claim 11, wherein the carbonate containing material is a aldehyde.

14. The method of claim 11, wherein the underlying layer is a substrate.

15. The method of claim 11, wherein the photoresist is a negative tone photoresist.

16. The method of claim 11, wherein exposing at least a portion of the photoresist to radiation is done through a mask.

17. The method of claim 11, wherein the radiation is generated from an EUV exposure tool.

18. The method of claim 11, further comprising baking the photoresist.

19. The method of claim 11, wherein the photoresist further comprises a first aromatic structure copolymerized with the cycloolefin.

20. The method of claim 19, wherein the first aromatic structure is functionalized with a first functional group.

21. The method of claim 20, wherein the first functional group is selected from a group consisting of a hydrogen atom, an alkyl group, or a hydroxyl group.

22. The method of claim 19, wherein the di-ol comprises an alkyl functionalized by two hydroxyl groups.

23. The method of claim 22, wherein the di-ol further comprises a second, a third, and a fourth functional group, wherein each of the second, third, and fourth functional groups is a hydrogen atom, an alkyl group, an aromatic structure, or a cage.

24. The method of claim 11, wherein depositing the photoresist on an underlying layer comprises: spin-coating the photoresist on the underlying layer.

25. The method of claim 11, further comprising developing the photoresist layer by depositing a developer solution on the photoresist layer.

26. The method of claim 25, wherein the developer is TMAH.

27. The method of claim 26, wherein the developer is 2.38% TMAH.

28. The method of claim 25, further comprising stripping the at least a portion of the photoresist layer exposed to UV rays.